ONTARIO MINISTRY OF ENVIRONMENT
36936000024909

OPERATING SUMMARY

1974

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CITY OF

OWEN SOUND

WATER POLLUTION CONTROL PLANT

TD
367
.A56
O94
1974

Owen Sound : water pollution
control plant.

81865

Ontario

MINISTRY OF THE ENVIRONMENT

MINISTER
Honourable William G. Newman

DEPUTY MINISTER
E. Biggs

ASSISTANT DEPUTY MINISTER
REGIONAL OPERATIONS
J. Barr

REGIONAL OPERATIONS DIVISION

DIRECTOR, SOUTHWESTERN REGION
D. McTavish

MANAGER, UTILITY OPERATIONS
A. Ladbrooke

OWEN SOUND
WATER POLLUTION CONTROL PLANT

operated for

THE CITY OF OWEN SOUND

by the

MINISTRY OF THE ENVIRONMENT

1974 ANNUAL OPERATING SUMMARY

prepared by

Plant Performance Unit

TECHNICAL SERVICES BRANCH

T. Cross, Director

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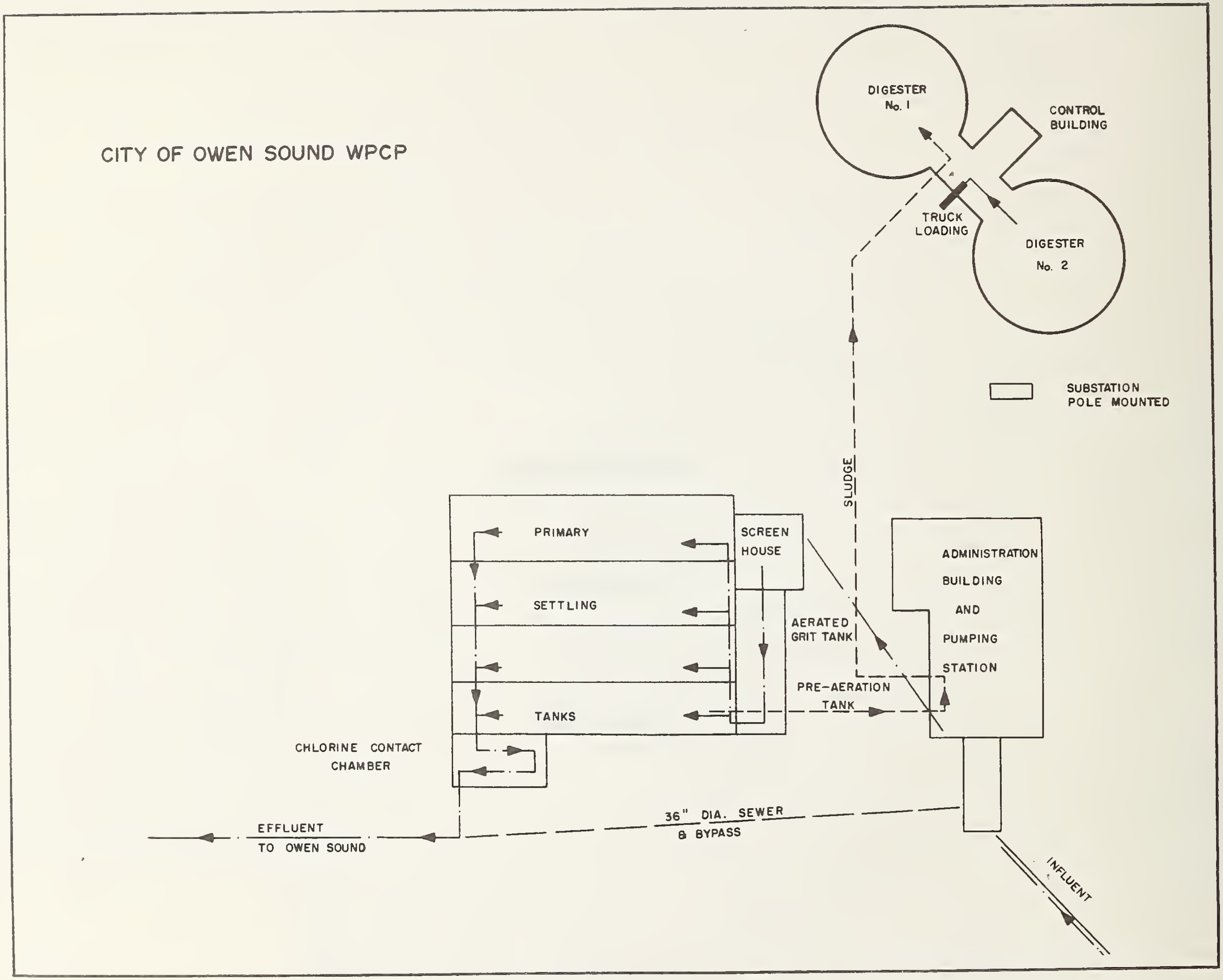


CITY OF OWEN SOUND WPCP

DESIGN DATA

PROJECT	City of Owen Sound WPCP
PROJECT NO.	2-0069-60
TREATMENT	Primary
DESIGN FLOW	3.0 mgd
DESIGN POPULATION	25,000
BOD - Raw Sewage	180 mg/l
- Removal	40%
SS - Raw Sewage	200 mg/l
- Removal	65%

SEWAGE PUMPING STATION

Screening

- 1 3/4" spacing

Pumps

Type: Worthington
Size: Three 3150 gpm @ 33' tdh
(One diesel standby)

PRIMARY TREATMENT

Comminution

Type: Barminutor
Size: One Model C (36")

Grit Removal

Type: Aerated
Size: One $18\frac{1}{2}$ X 13 X 12' (18,000 gal)
Retention: 8.6 min

Pre-aeration Tank

Size: One 23' 9" X 13 X 12'
(23,400 gal)
Retention: 11.2 min

Air Supply

Type: Sutorbilt
Size: Two 408 scfm @ 6 psi

Primary Sedimentation

Type: Rex Linkbelt
Size: Two 78 X 32 X $12\frac{1}{2}$'
(388,000 gal)
Retention: 3.11 hr
Loading: Surface, 600 gal/ft^2/day
Weir, 8,260 gal/ft/day

CHLORINATION

Type: W & T
Size: One 2000 lb/day

Chlorine Contact Chamber

Size: One 31 X 14 X 8' (21,700 gal)
Retention: 11.2 min

OUTFALL

- 828' to Owen Sound

SLUDGE HANDLING

Digestion System - Two-stage

Primary --
Type: PFT with one Sutorbilt compressor
Size: One 40' dia x 25' swd (31,400 cu ft or 0.196 mil gal)
Loading: 2.75 lb/cu ft/mo

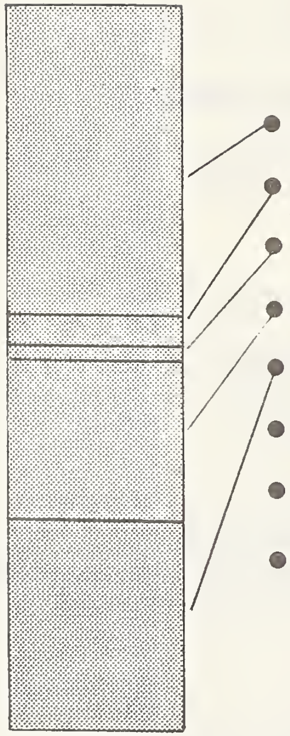
Secondary --
Size: One 40' dia x $24\frac{1}{2}$' swd (30,800 cu ft or 0.192 mil gal)
Total Loading: 1.88 lb/cu ft/mo

WEST SIDE PUMPING STATION

One - 3916 gpm Chicago Pump
Two - 1000 gpm Smart-Turner
Standby - Diesel generator

ANNUAL COSTS

1974 OPERATING COSTS



● SALARIES & WAGES	42 %
● EMPLOYEE BENEFITS	4 %
● TRANSPORTATION & COMMUNICATIONS	2 %
● SERVICES	18 %
● SUPPLIES & EQUIPMENT	34 %
● AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS	
● TRANSFER PAYMENTS	
● OTHER TRANSACTIONS	

YEARLY OPERATING COSTS

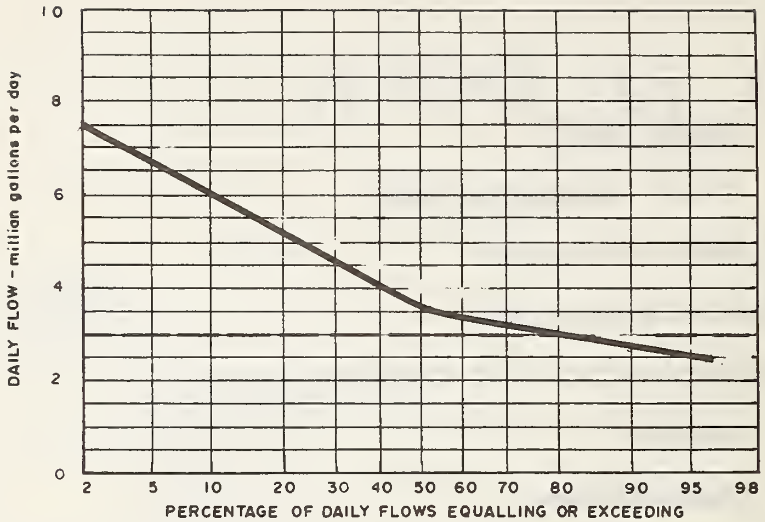
YEAR	SEWAGE TREATED in million gallons	TOTAL OPERATING COSTS	UNIT COSTS	
			$/M.G.	¢/lb BOD
1969	1475	53, 550	36	5
1970	1387*	60, 198	43	6
1971	1280	62, 105	38	13
1972	1427*	64, 102	45	6
1973	1788*	82, 680	46	18
1974	1386	106, 625	77	19

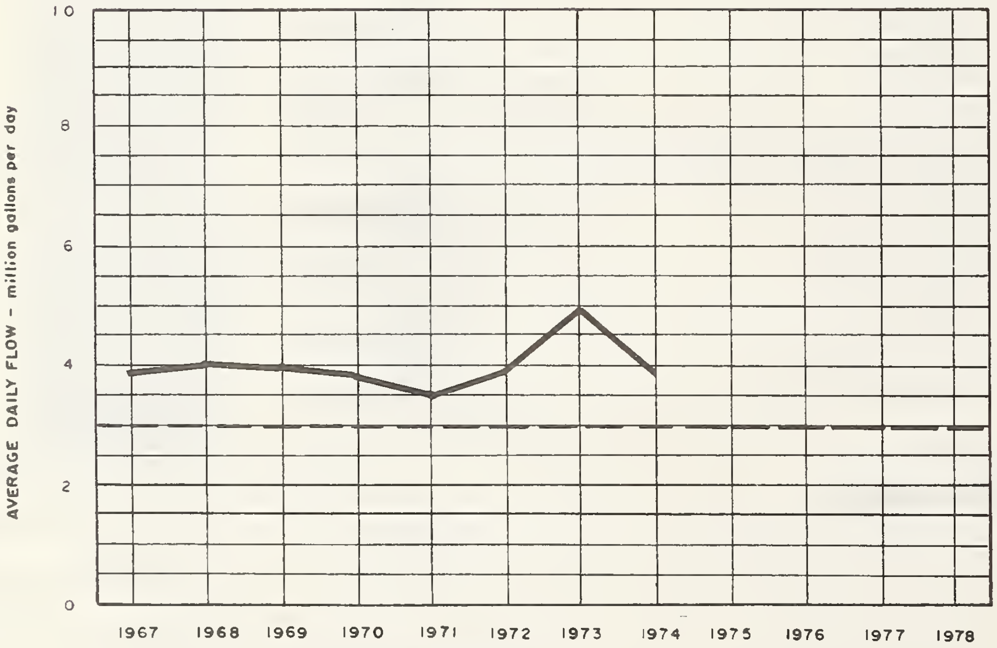
OPERATING EXPENDITURES

Regular Staff	$ 44,395	$
Casual (Unclassified) Staff	-	
TOTAL SALARIES AND WAGES		44,395
TOTAL EMPLOYEE BENEFITS		4,147
TOTAL TRANSPORTATION AND COMMUNICATIONS		1,776
Insurance	1,955	
Sludge Haulage	15,513	
Repairs and Maintenance	618	
Other Services	1,546	
TOTAL SERVICES		19,632
Machinery and Equipment	5,849	
Chemicals	13,773	
Utilities	14,332	
Other Supplies and Equipment	2,721	
TOTAL SUPPLIES AND EQUIPMENT		36,675
TOTAL AQUISITION/CONSTRUCTION OF PHYSICAL ASSETS		
TOTAL TRANSFER PAYMENTS		
OTHER TRANSACTIONS		
GRAND TOTAL	GRAND TOTAL	$ 106,625

PROCESS DATA

FLOWS



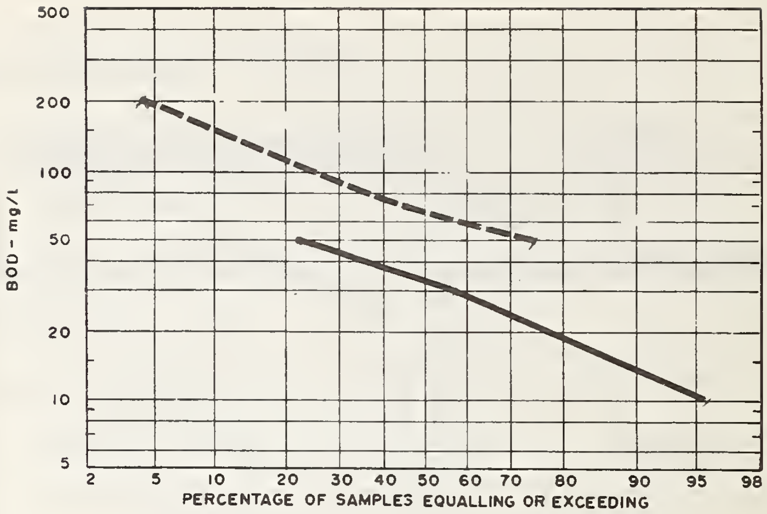


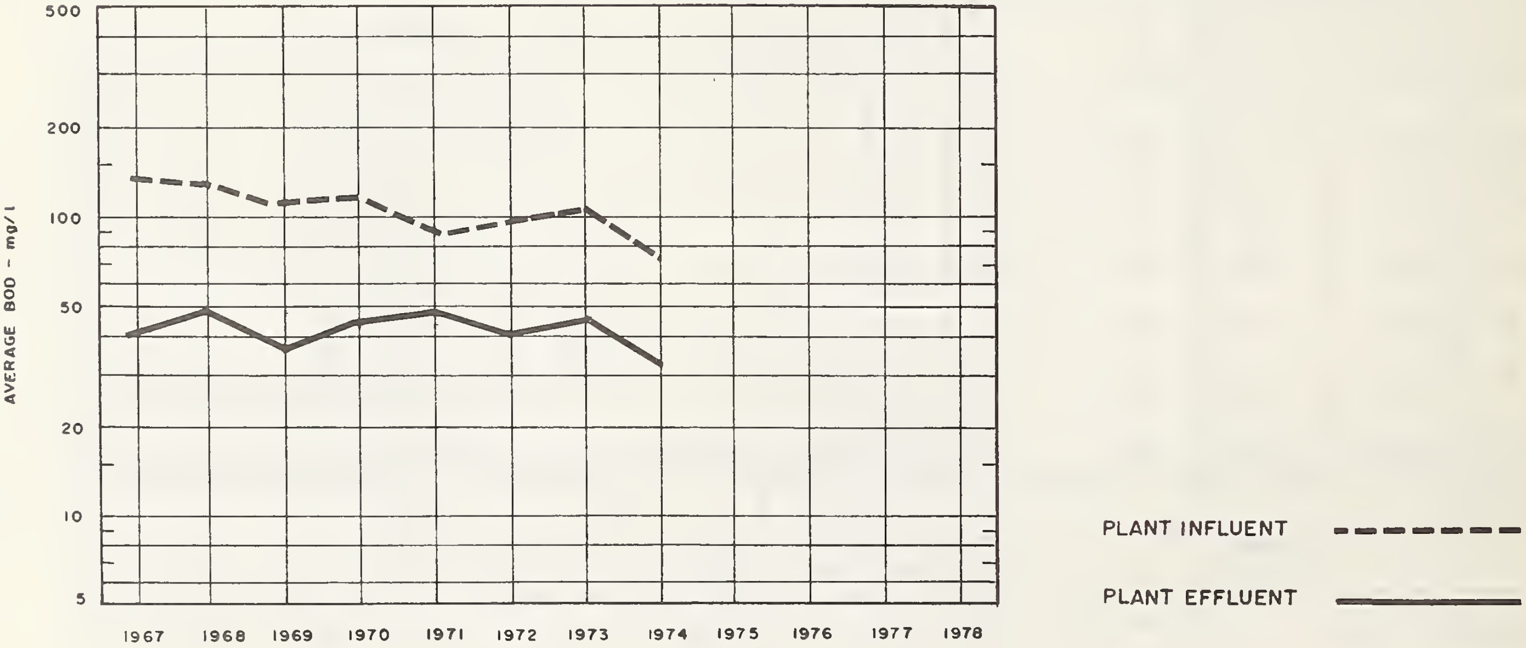
DESIGN CAPACITY – – – – – – – –

PLANT PERFORMANCE

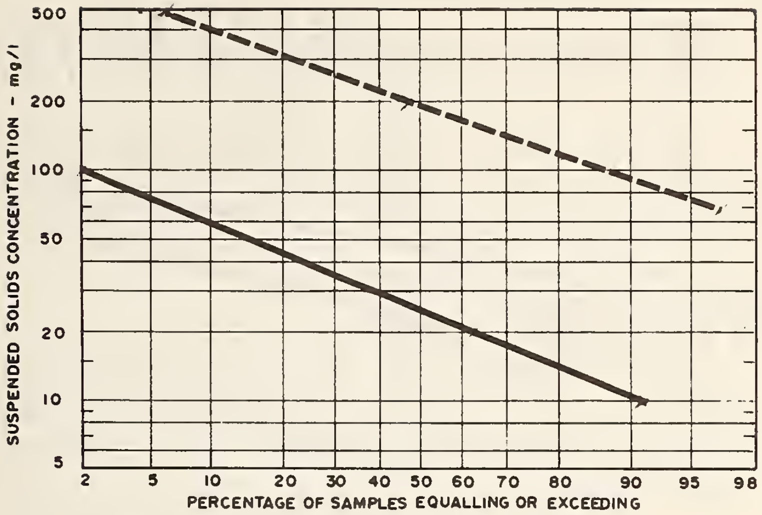
MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW million gallons	AVERAGE DAY mil. gal	MAXIMUM DAY mgd	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION %	REDUCTION 10^3 pounds	INFLUENT mg/l	EFFLUENT mg/l	REDUCTION %	REDUCTION 10^3 pounds	INFLUENT mg/l P	EFFLUENT mg/l P
JAN	145.7	4.7	8.3	51	44	14	10.2	441	55	88	562.4	2.9	2.2
FEB	117.6	4.2	8.8	123	48	61	88.2	429	63	85	430.4	7.7	2.2
MAR	138.4	4.5	8.5	65	44	32	29.1	294	38	87	354.3	2.6	1.7
APR	147.4	4.9	7.8	47	39	17	11.8	199	53	73	215.2	2.0	1.5
MAY	137.9	4.4	6.1	46	32	30	19.3	241	26	89	296.5	3.0	2.1
JUNE	96.8	3.2	4.6	135	28	79	103.6	430	36	92	381.3	4.4	2.0
JULY	102.4	3.3	5.1	85	38	55	48.1	214	22	90	196.6	4.6	1.4
AUG	90.5	2.9	4.8	75	36	52	35.3	245	22	91	201.8	4.0	1.2
SEPT	89.1	3.0	5.0	63	39	38	21.4	221	39	82	162.2	4.8	3.2
OCT	104.0	3.4	7.1	72	14	81	60.3	221	32	86	196.6	3.6	1.0
NOV	116.3	3.9	6.6	64	23	64	47.7	194	29	85	191.9	3.2	.8
DEC	100.4	3.2	5.4	50	22	56	28.1	206	21	90	185.7	3.2	.4
TOTAL	1386.5	-	-	-	-	-	555	-	-	-	3000	-	-
AVG.		3.8	MAXIMUM 8.8	73	33	55	46	250	34	86	250	3.6	1.6
No. of Samples	-	-	-	24	24	-	-	124	124	-	-	24	24

BIOCHEMICAL OXYGEN DEMAND



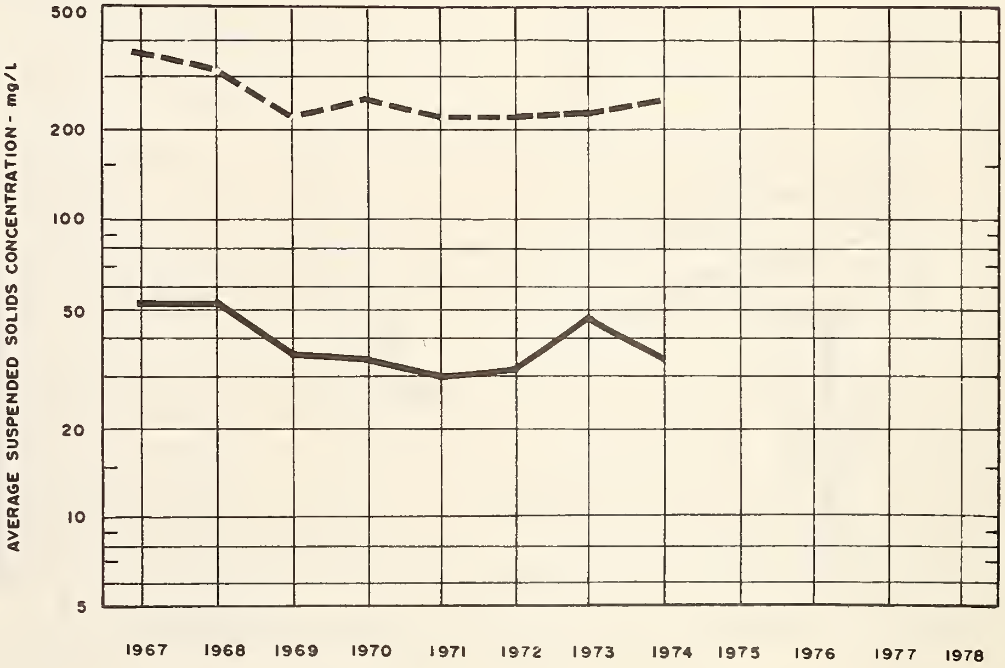


SUSPENDED SOLIDS

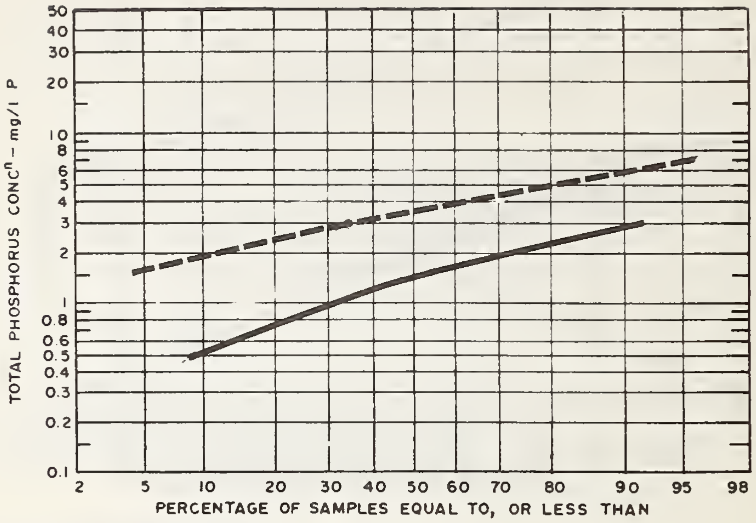


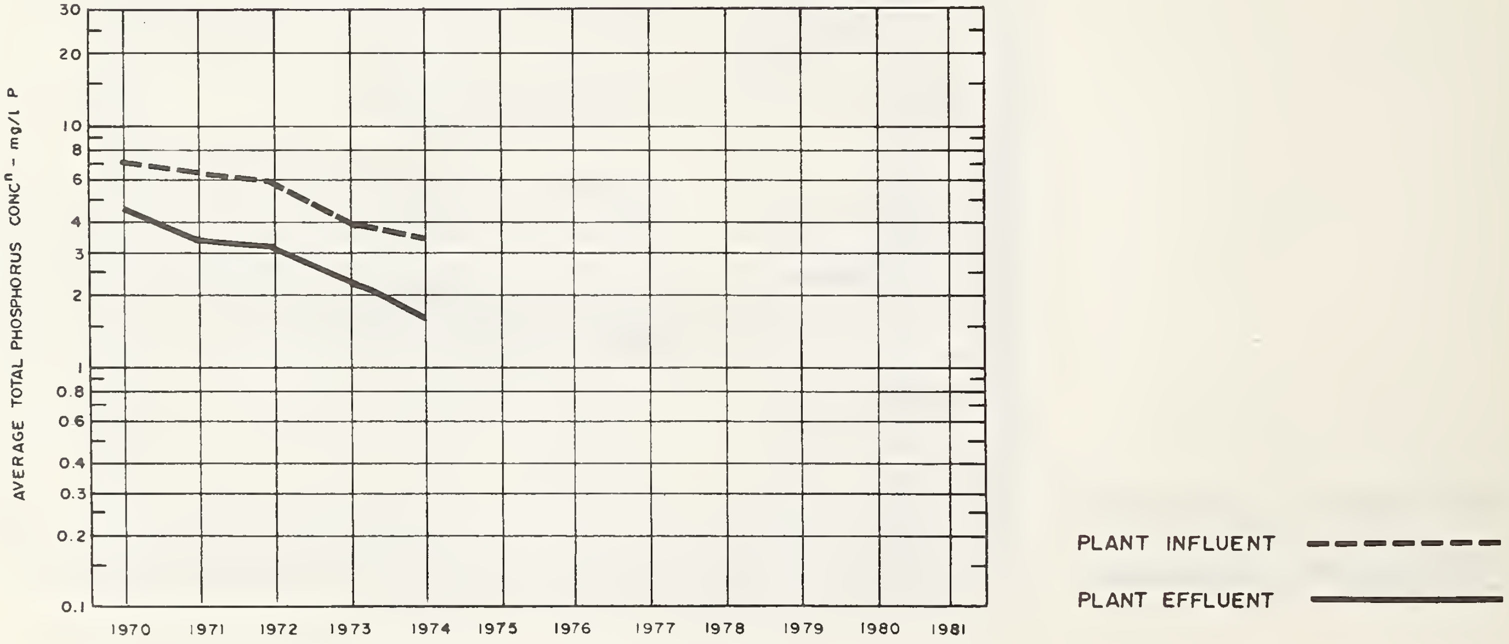
PLANT INFLUENT - - - - - - -

PLANT EFFLUENT ———————

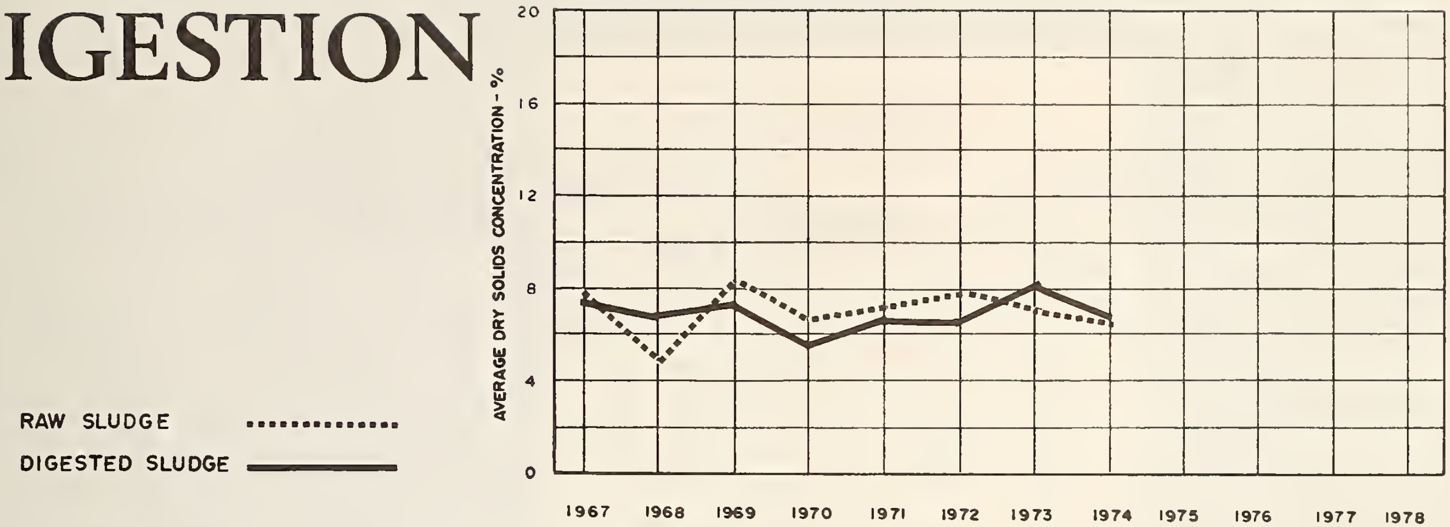


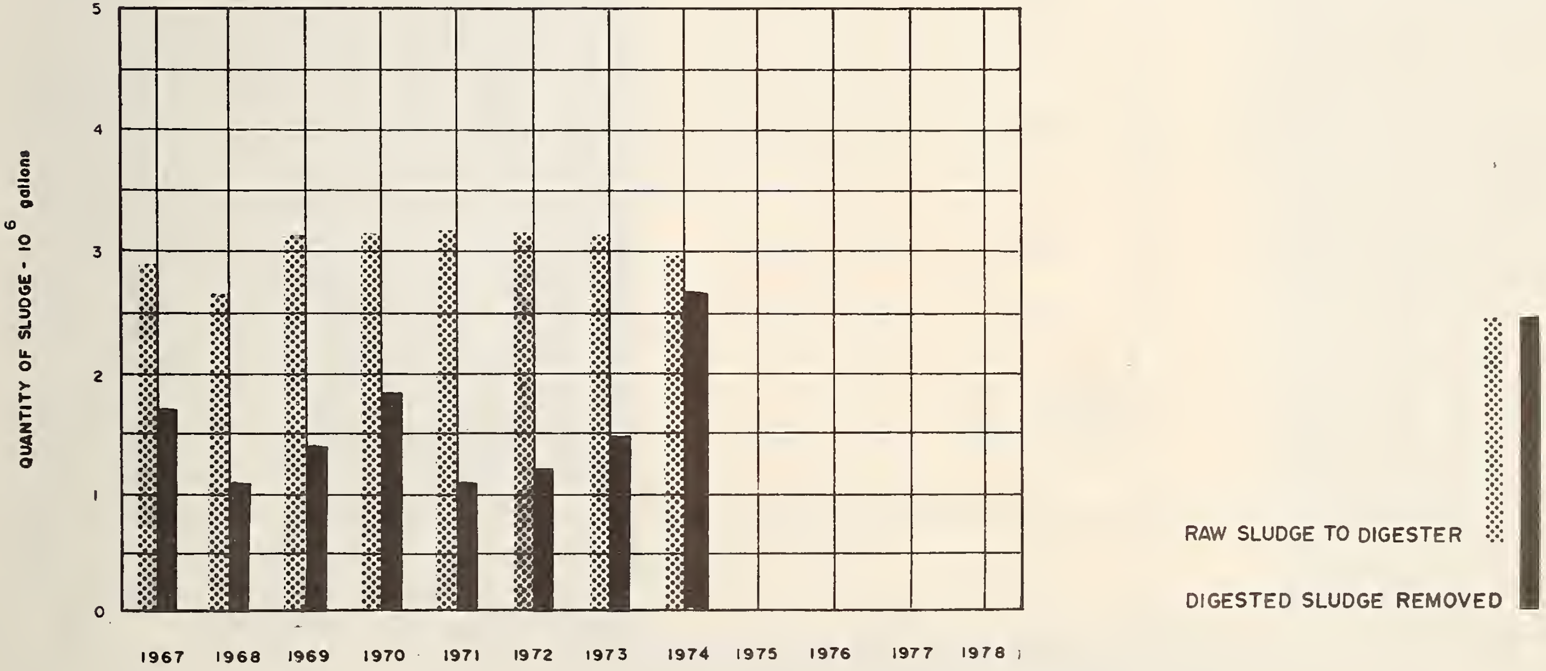
PHOSPHORUS


TOTAL PHOSPHORUS CONCⁿ - mg/l P
50
40
30
20
10
8
6
5
4
3
2
1
0.8
0.6
0.5
0.4
0.3
0.2
0.1
2
5
10
20
30
40
50
60
70
80
90
95
98
PERCENTAGE OF SAMPLES EQUAL TO, OR LESS THAN


AVERAGE TOTAL PHOSPHORUS CONCⁿ - mg/l P
30
20
10
8
6
4
3
2
1
0.8
0.6
0.4
0.3
0.2
0.1
1970
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
PLANT INFLUENT - - - - - -
PLANT EFFLUENT ———

DIGESTION


RAW SLUDGE
DIGESTED SLUDGE
AVERAGE DRY SOLIDS CONCENTRATION - %
20
16
12
8
4
0
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978


QUANTITY OF SLUDGE - 10^6 gallons
5
4
3
2
1
0
1967
1968
1969
1970
1971
1972
1973
1974
1975
1976
1977
1978
RAW SLUDGE TO DIGESTER
DIGESTED SLUDGE REMOVED

TREATMENT DATA

	GRIT	CHLORINATION		SLUDGE DIGESTION and DISPOSAL							
				RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT	
MONTH	QUANTITY REMOVED cubic feet	CHLORINE USED 10^3 pounds	AVERAGE DOSAGE mg/l	QUANTITY 10^5 gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	QUANTITY REMOVED 10^5 gallons	TOTAL SOLIDS %	VOLATILE SOLIDS %	TOTAL SOLIDS %	SLUDGE HAULED cubic yards
JAN	160	3.9	2.7	248	6.3	44	122	8.9	21	.06	717
FEB	70	3.6	3.1	224	6.5	48	165	13.8	20	.06	979
MAR	66	3.9	2.8	248	7.0	44	128	6.6		.02	759
APR	144	3.7	2.5	240	8.9	40	132	9.2		.03	781
MAY	120	4.1	2.9	248	6.7	48	122	6.9	29	.03	726
JUNE	98	3.9	4.1	240	7.7	46	107	8.8	25	.05	638
JULY	147	3.9	3.8	253	7.7	47	252	6.2	28	.37	1496
AUG	100	3.8	4.2	287	5.0	52	275	4.7	33	1.30	1631
SEPT	75	3.6	4.0	248	4.9	70	315	4.4	42	1.20	1870
OCT	115	3.8	3.6	248	4.5	56	461	5.3	28	.30	2739
NOV	86	3.9	3.3	240	7.6	57	339	9.1	31		2012
DEC	83	3.8	3.8	248	6.2	54	235	5.7	47		1397
TOTAL	1264	45.9	–	2972	–	–	2653	–	–	–	15745
AVG.	.9 cubic feet/mil gal		3.3	248	6.6	51	221	6.8	33	.34	1312

Date Due

LAB

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